CLAIMS

1. An apparatus used in press brakes having a lower press member and an upper press member which are movable relative toward and away from each other for forming bending and forming sheet materials, said lower press member comprising:

a die base formed of a generally U-shaped configuration and having a first recess and a second recess disposed opposite to said first recess;

first and second mobile carrier shoes being disposed in a corresponding one of said opposed first and second recesses;

a plurality of first and second movable spacer bars being also disposed in a corresponding one of said opposed first and second recesses;

a pair of anvils each one being disposed in a corresponding one of said first and second mobile carrier shoes;

each one of said pair of anvils being formed of a rectangular shape and having four corners each provided with a

separate and distinct radius of curvature so as to define four alternative forming surfaces;

each one of said anvils being initially positioned so that a first one of the four corners having the same radius of curvature are on top and facing inwardly toward the other corresponding to a first one of the four alternative forming surfaces and forming a first die-size opening therebetween used for bending and forming a material of a predetermined gauge; and

each one of said anvils being selectively rotatable to second through fourth positions so that second through fourth ones of the four corners having the same radius of curvatures are on top and facing inwardly toward the other corresponding to second through fourth ones of the four alternative forming surfaces and forming second through fourth die-size openings therebetween used for bending and forming a material of different predetermined gauges.

2. An apparatus for bending and forming sheet material as claimed in Claim 1, wherein the first one of the four corners on each one of said pair of anvils has a radius of

curvature equal to .031 inch, the second one has a radius of curvature equal to .062 inch, the third one has a radius of curvature equal to .125 inch, and the fourth one has a radius of curvature equal to .250.

3. An apparatus for bending and forming of sheet material as claimed in Claim 1, wherein each one of said plurality of first and second movable spacer bars are made of a different thickness.

4. An apparatus for bending and forming of sheet material as claimed in Claim 3, wherein each one of said plurality of first and second movable spacer bars consist of five spacer bars, said plurality of first spacer bars being disposed between a first inside wall of said die base and said first carrier shoe, said plurality of second spacer bars being disposed between a second inside wall of said die base and said second carrier shoe.

5. An apparatus for bending and forming of sheet material as claimed in Claim 4, wherein a first one of said plurality of first and second spacer bars has a thickness of .250 inch, a second one of said plurality of first and second spacer bars has a thickness of .062 inch, a third one of said plurality of first and second spacer bars has a thickness of .062 inch, a fourth one of said plurality of first and second spacer bars has a thickness of .125

inch, and a fifth one of said plurality of first and second spacer bars has a thickness of .250 inch.

6. An apparatus for bending and forming of sheet material as claimed in Claim 5, wherein the second one of said plurality of first and second spacer bars are transferred to be adjacent to outside walls of said die base so as to increase the first through fourth die-size openings by .125 inch.

7. An apparatus for bending and forming of sheet material as claimed in Claim 4, wherein the first through fifth ones of said plurality of first and second spacer bars are transferred sequentially in .062 inch increments to be adjacent to outside walls of said die base, thereby allowing twelve additional expanded die-size openings for each of the first through fourth die-size openings per each corner of said anvils.

8. An apparatus for bending and forming of sheet material as claimed in Claim 3, each one of said plurality of first and second spacer bars are transferred sequentially to be adjacent to outside walls of said die base, thereby allowing additional expanded die-size openings for each of the first through fourth die-size openings per each corner of said anvils.

9. An apparatus for bending and forming of sheet material as claimed in Claim 4, wherein said five spacer bars of said plurality of first and second spacer bars are formed with a plurality of inverted U-shaped notches so as to facilitate the easy removal from the first and second inside walls and their replacement on outside walls of said die base.

10. In a press brake for bending and forming sheet materials, the improvements comprising:

die base means having a first recess and a second recess disposed opposite to said first recess;

first and second enlarged anvils being disposed in a corresponding one of said opposed first and second recesses;

spacer bar means being also disposed in a corresponding one of said opposed first and second recesses;

each one of said first and second enlarged anvils having a forming surface facing inwardly toward the other surface so as to form a die-size opening therebetween used for the forming and bending of a material of a predetermined gauge; and

each one of said forming surfaces having one of a number of special shapes used in performance of a forming operation.

11. In a press brake as claimed in Claim 10, wherein said spacer bar means includes a plurality of first and second movable spacer bars which are made of a different thickness.

12. In a press brake as claimed in Claim 11, wherein each one of said plurality of first and second movable spacer bars consists of five spacer bars, said plurality of first spacer bars being disposed between a first inside wall of said die base means and said first enlarged anvil, said plurality of second spacer bars being disposed between a second inside wall of said die base means and said second enlarged anvil.

13. In a press brake as claimed in Claim 12, wherein a first one of said plurality of first and second spacer bars has a thickness of .250 inch, a second one of said plurality of first and second spacer bars has a thickness of .062 inch, a third one of said plurality of first and second spacer bars has a thickness of .062 inch, a fourth one of said plurality of first and second spacer bars has a thickness of .125 inch, and a fifth one of said plurality of first and second spacer bars has a thickness of .250 inch.

14. In a press brake as claimed in Claim 13, wherein the second one of said plurality of first and second spacer bars are

transferred to be adjacent to outside walls of said die base means so as to increase the die-size opening by .125 inch.

15. In a press brake as claimed in Claim 13, wherein the first through fifth ones of said plurality of first and second spacer bars are transferred sequentially in .062 inch increments to be adjacent to outside walls of said die base means, thereby allowing twelve additional expanded die-size openings for the die-size opening between said enlarged anvils.

16. In a press brake as claimed in Claim 11, each one of said plurality of first and second spacer bars are transferred sequentially to be adjacent to outside walls of said die base means, thereby allowing additional expanded die-size openings for the die-size opening between said enlarged anvils.

17. In a press brake as claimed in Claim 12, wherein said five spacer bars of said plurality of first and second spacer bars are formed with a plurality of inverted U-shaped notches so as to facilitate the easy removal from the first and second inside walls and their replacement on outside walls of said die base means.

18. A method for use in press brakes having a lower press member and an upper press member which are movable toward and away from each other for bending and forming sheet materials, said method comprising:

providing a die base having a first recess and a second recess disposed opposite to the first recess;

affixing first and second carrier shoes in a corresponding one of said opposed first and second recesses;

affixing also a plurality of first and second movable spacer bars in a corresponding one of said opposed first and second recesses;

affixing a pair of anvils in a corresponding one of said carrier shoes;

forming the four corners on each one of said pair of anvils with a separate and distinct radius of curvature so as to define four alternative forming surfaces;

positioning initially each one of said pair of anvils so that a first one of the four corners having the same radii of curvature are on top and facing inwardly toward the other corresponding to a first one of the four alternative forming surfaces to provide a first die-size opening therebetween used for the bending and forming of a material of a predetermined gauge; and

selectively rotating each one of said pair of anvils to second through fourth positions so that second through fourth ones of the four corners having the same radii of curvatures are on top and facing inwardly toward the other corresponding to second through fourth ones of the four alternative forming surfaces to provide second through fourth die-size openings therebetween used for the bending and forming of a material of different predetermined gauges.

19. A method as claimed in Claim 18, further including the step of transferring sequentially each one of said plurality of first and second spacer bars to be adjacent to outside walls of said die base, thereby allowing additional expanded die-size

openings for each of the first through fourth die-size openings per each corner of said anvils.